UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on <u>6 September 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This action is responsive to the Applicant's response filed 9/6/07.

As indicated in Applicant's response, claims 1, 6, 8 have been amended. Claims 1-19 are

pending in the office action.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new
> and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3.   Claims 1-7 are rejected under 35 U.S.C. 101 because the claimed invention is directed to

non-statutory subject matter.

The Federal Circuit has recently applied the practical application test in determining whether the claimed
subject matter is statutory under 35 U.S.C. § 101. The practical application test requires that a " useful, concrete,
and tangible result" be accomplished. An "abstract idea" when practically applied is eligible for a patent. As a
consequence, an invention, which is eligible for patenting under 35 U.S.C. § 101, is in the "useful arts" when it is a
machine, manufacture, process or composition of matter, which produces a concrete, tangible, and useful result. The
test for practical application is thus to determine whether the claimed invention produces a "useful, concrete and
tangible result".

The current focus of the Patent Office in regard to statutory inventions under 35 U.S.C. §

101 for method claims and claims that recite a judicial exception (software) is that the claimed

invention recite a practical application. Practical application can be provided by a physical

transformation or a useful, concrete and tangible result. The following link on the World Wide

Web is for the United States Patent And Trademark Office (USPTO) policy on 35 U.S.C. §101.

<http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf>

Claims 1-7 are rejected under 35 U.S.C. 101 because the claimed invention is directed to

non-statutory subject matter. The current focus of the Patent Office in regard to statutory

inventions under 35 U.S.C. § 101 for method claims and claims that recite a judicial exception

(software) is that the claimed invention recite a practical application. Practical application can

be provided by a physical transformation or a useful, concrete and tangible result.

Specifically, claim 1 recite a modular assembly of software comprising plurality of

atoms, maps, and map engine, all of which appeared from scanning the Specifications to be

software-implemented entities. Listing of mere software without hardware embodiment to

support the carrying.out of the functionality integral to such software is considered non-practical

because there is no reasonable possibility that the software as recited can yield a data

transformation via hardware execution. According to the 101 Guidelines pdf file as set forth,

above, 'functional descriptive material' such as software entities should be analyzed carefully in

order to determine whether it is supported by reasonable hardware embodiment in order to carry

out the functionality. The listing of mere software functionality per se as set forth above is non-

statutory because no sufficient teaching about hardware is recited (see Guidelines, Annex IV,

pg. 53-54) The claim for failing the test for *Practical Application*, is rejected as a non-statutory

subject matter.

Claims 2-5 are rejected for not remedying the lack of hardware support in claim 1.

Claim 6 recites assembly of software with the same entities as recited in claim 1; thus

claim 6-7 for failing to generate a tangible, concrete and useful result, are rejected as a non-

statutory subject matter.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

5.   Claims 12-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention. Claims 12-13 recites the limitation "the function to be performed" in the

respective last line. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

7.   Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al.,

USPN: 6,282,699 (hereinafter Zhang) in view of Peck, USPubN: 2005/0034102 (hereinafter

Peck).

        As per claim 1, Zhang discloses modular assembly of software configured to operate a

function, said modular assembly comprising:

        a plurality of atoms (e.g. script node, code node – col. 9, lines 45-61), each of said

plurality of atoms designed to execute a defined task;

        a plurality of maps (e.g. Fig. 9-13; script 412, 412 – Fig. 6) invoking a portion of said

plurality of atoms for executing events (e.g. functions – Fig. 8; script 414, 412 – Fig. 7) that

include a portion of said defined task; and

        a map engine in communication with each of said plurality of maps (e.g. Fig. 3-4;

Graphical program 402 – Fig. 6; col. 9, line 35 to col. 10, line 23), said map engine coordinating

an order and a timing (e.g. Note: user customizing via selection of graph node, test directives

with input into script specification – see Fig. 8; col. 17-18; *add input* -- Fig. 10; *can be*

performed ... different orders – col. 9, lines 24-26; Fig. 12 -- reads on coordinating via the GUI

Matlab/Labview interface to effect *order and timing* of testing of code nodes) for starting of each

of said plurality of maps,

wherein said map engine modifies said order and said timing based on inputs and

variables received (e.g. input -- Fig. 10; col. 17, lines 32-45; col. 18, lines 15-24; col. 11, lines 1-

15; Fig. 3-5) thereby before and during operation (e.g. *interpreted ... selects "run"* - col. 11,

lines 10-40) of said plurality of maps.

Zhang does not explicitly disclose that function executed via map execution is to operate

or modify the operation of the hardware. However, Zhang's use of Labview and Matlab

resources (see Fig. 6, 8-13) entails user interface tool in design of applications whose

functionality is implemented by programming languages in well-known domain such as an

industrial automation application (see col. 3, lines 14-57; col. 8, lines 1-8). Peck, in

programming language environment using Labview and Matlab, discloses a debugging tool

using a reconfigurable and programmable object to simulate a industrial application involving

control functions of a hardware (see Peck: *timing, measurement, control* - para 0109-0116, pg. 8-

9; PLC –para 0235, pg. 18) which is analogous to Zhang's approach using engine to modify

input/output to simulated functions. It would have been obvious for one skill in the art at the

time the invention was made to use Zhang's Labview interface to support design of order and

timing of hardware-related functions as taught by Zhang so that the map engine would modify

conditions for execution the maps to operate hardware using Labview or Matlab Simulink as by

Peck, because industrial applicability as mentioned by Zhang's can be enhanced via effectuating

reconfigurating tool as by Peck in applying Simulink or Labview to operate functions and control of hardware devices.

As per claims 2-3, Zhang discloses a prioritizer to identify said order and said timing of execution (see Fig. 8; col. 17-18; *add input* -- Fig. 10; *can be performed ... different orders* – col. 9, lines 24-26; Fig. 12 –Note: user selection reads on ability to prioritize what needs to execute first via connecting elements – see Fig. 3 -- to a graph script in some order) of each of said plurality of maps and each of said plurality of atoms; wherein said prioritizer includes input lines which receive inputs from clients (e.g. step 308-309 – Fig. 3; Fig. 7-9; *user ...enter code ... textual code* – col. 10, lines 30-35) that may change said order and said timing of execution of each of said plurality of maps.

As per claims 4-5, Zhang discloses wherein each of said plurality of atoms includes a design element classifying a type of executable, identifying inputs required to operate the executable and identifying a purpose therefor (see Fig. 7-9; input – Fig. 10, type – Fig. 15; *input and output terminals* – col. 15, lines 29-63; col. 17, line 55 to col. 18, line 28); wherein each of said plurality of atoms includes an execution element (e.g. col. 13, lines 53-57; DLL 432, 434 – Fig. 7; Fig. 6; script node, code node – col. 9, lines 45-61; Fig. 5) that executes said defined task.

As per claim 6, Zhang discloses a modular assembly of software configured to perform a operate a function, said modular assembly comprising:

a plurality of atoms designed to execute a plurality of tasks, each of said plurality of atoms including a design element and an execution element such that each of said design elements identifies a type of executable, inputs required by each of said plurality of atoms and purpose therefor (e.g. Fig. 7-9; input – Fig. 10, type – Fig. 15; *input and output terminals* – col.

15, lines 29-63; col. 17, line 55 to col. 18, line 28); wherein each of said plurality of atoms

includes an execution element (e.g. col. 13, lines 53-57; DLL 432, 434 – Fig. 7; Fig. 6; script

node, code node – col. 9, lines 45-61; Fig. 5), and

each of said execution elements execute said defined task (e.g. col. 13, lines 53-57; Fig.

5);

a plurality of maps invoking a portion of said plurality of atoms for executing events that

include a portion of said defined task (Fig. 9-13; script 412, 412 – Fig. 6; functions – Fig. 8;

script 414, 412 – Fig. 7); and

a map engine in communication with each of said plurality of maps (Fig. 3-4; Graphical

program 402 – Fig. 6; col. 9, line 35 to col. 10, line 23), said map engine coordinating an order

and a timing for starting of each of said plurality of maps, wherein said map engine modifies said

order and said timing based on inputs and variables received (see Fig. 8; col. 17-18; *add input* --

Fig. 10; *can be performed ... different orders* – col. 9, lines 24-26; Fig. 12) thereby before and

during operation (*interpreted ... selects "run"* - col. 11, lines 10-40) of said plurality of maps.

Zhang does not explicitly disclose that function executed via map execution is to operate

or modify the operation of the hardware. But this limitation has been rendered obvious in view

of the rationale as set forth in claim 1.

As per claim 7, refer to rejection as set forth in claim 2.

As per claim 8, Zhang discloses a method of operating a function using plurality of

defined tasks, using a map engine, a plurality of maps, and a plurality of atoms, each having

design and executable elements (e.g. *invoke execution, edit the code* - col. 3, lines 46-63;

Mathmetics, formula, Matlab - Fig. 8; Fig. 3, 10-13), the method comprising the steps of:

activating the map engine (e.g. Fig. 3-4; Graphical program 402 – Fig. 6; col. 9, line 35 to

col. 10, line 23);

cataloging each of the plurality of atoms so that the map engine has an accurate inventory

(import ... from a file – col. 10, lines 40-49; Fig. 8 – Note: Math functions in a Matlab tool – see

col. 16, lines 5-39 -- reads on functions being stored in a reusable library analogous to

cataloguing) of the plurality of atoms available;

identifying an occurrence of an event (Fig. 3 – Note: any user action reads on event);

associating the event with one of the plurality of maps (Fig. 3);

loading the one of the plurality of maps associated with the event (Fig. 3-5); and

executing each of the plurality of atoms identified with the one of the plurality of maps

such that operating of a function is done in response to the occurrence of the event (e.g. Fig. 7-9;

input – Fig. 10, type – Fig. 15; *input and output terminals* – col. 15, lines 29-63; col. 17, line 55

to col. 18, line 28).

Zhang does not explicitly disclose that function executed via map execution is to operate

or modify the operation of the hardware. But this limitation has been rendered obvious in view

of the rationale as set forth in claim 1.

As per claims 9-10, Zhang discloses loading a plurality of maps, each being loaded in

response to an identification of an event (e.g. Fig. 3-4; Graphical program 402 – Fig. 6; col. 9,

line 35 to col. 10, line 23; Fig. 8-10 – Note: Labview and user-driven loading of screen and script

node reads on plurality of maps to invoke scripts executable node; wherein the step of

identifying an occurrence of an event includes the receipt of an input (e.g. Fig. 7-9; input – Fig.

10, type – Fig. 15; *input and output terminals* – col. 15, lines 29-63; col. 17, line 55 to col. 18,

line 28).

As per claim 11, Zhang discloses the step of receiving the input into one of the plurality

of atoms (refer to claim 10).

As per claims 12 and 14, Zhang discloses changing the plurality of atoms associated

with the plurality of maps based on a change in the function to be performed (e.g. Fig. 3, Fig. 5

Note: selection of graph node by user in light of option to test and reintegration of instance

provided from server reads on any change of function to be executed leading to *changing the*

number of atoms being executed -- in view of the user customizing of script and verification of

script constructs – see col. 16-19, and user's change due to rule-based authorizing of properly

validated atoms);

As per claims 13 and 15, Zhang discloses changing the plurality of maps (e.g. col. 16-

19) associated with function based on a change in the function to be performed (Note: a input

specifying by a user to effect some script adapting, selection for reediting, for output generating

or re-evaluating, thus implicating more than one debugging scenarios – see *executing scripts* –

col. 9, lines 45-53; Fig. 13-14; *choose server script, debugging* - col. 18-19 – reads on *changing*

the number of maps being invoked).

As per claims 16-17, Zhang discloses changing the plurality of atoms is performed

independently (Fig. 8; Fig. 3) of the step of changing the plurality of maps; and wherein the step

of changing the plurality of maps is performed independently of the step of changing the

plurality of atoms (Note: selecting and dropping of code node into a graph – see Fig. 3 -- is

independent from changing the script scenario as a consequence of debugging or reevaluating output from running previous scripts – refer to claim 15).

As per claims 18-19, Zhang discloses wherein the step of changing the plurality of atoms includes the step of modifying the number of the plurality of atoms being executed with one of the plurality of maps (re claim 14); wherein the step of changing the plurality of atoms includes the step of modifying an order (Fig. 8; col. 17-18; *add input* -- Fig. 10; *can be performed ... different orders* – col. 9, lines 24-26; Fig. 12) in which the plurality of atoms are executed within one of the plurality of maps.

Response to Arguments

8.   Applicant's arguments filed 9/6/07 have been fully considered but they are either moot or not persuasive. Following are the Examiner's observation in regard thereto.

35 USC § 101 Rejection:

(A)   Applicants submitted that the amended claims clearly teach a useful, concrete and tangible result (Appl. Rmrks pg. 6). The Rejection has addressed the impropriety in terms of the rationale that non-statutory subject matter here is that 'functional descriptive material' per se cannot reasonably be construed as able to be materialized into any result.

35 USC § 102 Rejection:

(B)   Applicants argument about Zhang not disclosing 'operation of hardware' (Appl. Rmrks pg. 7) is moot in view of the new grounds of rejection which have been necessitated by the Amendments.

(C)   Applicants have submitted that Zhang discloses modification to a running operation that requires the changes to be taken off line for recompilation, not during the operation (Appl.

Rmrks, pg. 8). In a simulation environment, operation timeframe including programmatic

objects being simulated entails an ongoing debug process wherein observation of execution

entities and constitutes 'during operation' timeframe. When the claim does not provide

sufficient details to characterize further what 'during operation' actually amounts to, the

debugging process by Zhang wherein user's interaction would be but one dynamic side/aspect of

a debugging tool runtime, and executing the code would be considered at least another part or

aspect of the above running (Labview) environment. The claim language cannot preclude Zhang

interactive application whereby user's inputs can be interpreted during the session being online

(see *interpreted ... selects "run"* - col. 11, lines 10-40). Applicant's arguments fail to comply

with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a

patentable invention without specifically pointing out how the language of the claims patentably

distinguishes them from the references. The argument contends that recompiling offline cannot

equate to 'during operation' of maps; but the claim does not provide details to enforce a clear

scenario --in regard to this during operation limitation-- that would clearly conveys that within

the very timeframe of code being executed, the operation of the entities being run are not stopped

while inputs or controls are being modified, e.g. that no offline compilation is needed because

the original executable code can dynamically import event data from the user's keyboard to re-

execute a new set of inputs. For that to be effective, a clear support in the Specifications would

have to be analyzed to prevent a possible lack of enablement. As it is, the claim is broad and

Zhang is deemed sufficient to fulfill the above 'during' limitation. Besides, the grounds of

rejection has now changed; and in response to applicant's arguments against the references

individually, one cannot show nonobviousness by attacking references individually where the

rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208

USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

(D)   The rest of the argument fall under the ambit of the 'during operation' limitation as set

forth above; and would be referred to section C above.

In all, the claims stand rejected as set forth in the Office Action.

Conclusion

9.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Tuan A Vu whose telephone number is (571) 272-3735. The

examiner can normally be reached on 8AM-4:30PM/Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on (571)272-3756.

The fax phone number for the organization where this application or proceeding is

assigned is (571) 273-3735 (for non-official correspondence - please consult Examiner before

using) or 571-273-8300 (for official correspondence) or redirected to customer service at 571-

272-3609.

Any inquiry of a general nature or relating to the status of this application should be

directed to the TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application

Information Retrieval (PAIR) system. Status information for published applications may be

obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

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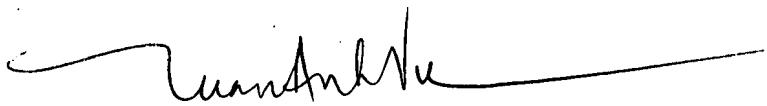
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November 01, 2007